

**Washington State Department of Ecology**  
**Guidelines for Characterizing Septic Tank Wastes at CDL Sites**  
**December 27, 2001**

This guideline is intended to provide a summary of recommended steps that will lead to safe, legal and environmentally protective management of wastes generated by cleaning out septic tanks at clandestine drug lab sites.

1. When removed from septic tanks, the contents are solid wastes subject to “designation” as dangerous wastes. Clandestine lab wastes are not considered household hazardous waste.
2. The most common types of contaminants expected to be discharged into septic systems from clan labs are:
  - Solvents (e.g., toluene, xylene, alcohol, acetone),
  - Petroleum distillates (e.g., paint thinner, white gas), and
  - Liquid corrosives (e.g., sulphuric acid, muriatic acid, sodium hydroxide solutions), and mixtures with residual ephedrine, methamphetamine, iodine or red phosphorus.
3. Composite samples of tank contents are considered representative of the waste “as generated”. Sampling of distinct phases (scum, floating, clear and sludge) may also be acceptable for the purpose of designating individual phases. (Ref. WAC 173-303-150).
4. Septic tank wastes will typically not qualify to be designated as listed hazardous wastes (P, U, or F-listed) because the solvents have been used and there is too much uncertainty about the types, sources and original concentrations of solvents discovered in septic tanks. (Ref. WAC 173-303-080 through –083).
5. Based upon available sampling information, septic tank wastes will typically not designate as ignitable hazardous waste. (Ref. WAC 173-303-090(5)). However, under severe conditions, there may be a floating layer of solvents in sufficiently high concentrations that it represents a fire or explosive hazard and may designate as ignitable hazardous waste if that layer were removed and managed as a separate liquid phase.
6. Septic tanks will typically not designate as dangerous waste for toxicity or persistence (ref. WAC 173-303-100). See Attachment 2, Toxicity of Common Drug Lab Chemicals, 5/31/01.
7. Soils and groundwater suspected of being contaminated by clan lab wastes must be managed under Ecology MTCA (Model Toxics Control Act) regulations (Chapter 173-340 WAC) and programs.

**Recommended Management Practices**

- R1. Continue current practice of local health districts re: required sampling of septic tanks at clan lab sites. Sampling is required when there are any reasons for concern about dumping of drug lab chemicals into a septic system. Reasons for concerns may include, but are not limited to:
  - Witness statements;
  - Stained or etched sinks, bathtubs, toilets;
  - Chemical odors coming from the septic system plumbing or tank; and
  - Visual observations of unusual conditions within the septic tank (“dead tank”); or, stressed or dead vegetation in a drain field.
- R2. It is appropriate to sample and analyze septic tanks for the most common types of solvents using SW-846 method 8260 for volatile organic compounds (VOC). [Current costs range from \$175-200 per sample.]
- R3. Samples must be representative of the wastes found in the septic tank. Normal sampling procedures will include the use of drum thieves, sludge judges or equivalent equipment.

- R4. On a case-by-case basis, sampling and analysis of individual layers within a septic tank may be acceptable.
- R5. If a composite sample exceeds 10,000 ppm VOC it may designate as a dangerous waste and be subject to regulation under Washington Dangerous Waste Regulations (Chapter 173-303 WAC). 10,000 ppm represents the concentration it would take for common drug lab solvents in a septic tank to designate as toxic dangerous waste (WT02).
- If tank contents are determined to exceed 10,000 ppm, the appropriate steps for waste management and disposal include:
- a. Determine if the total waste sample is ignitable and manage as dangerous waste (D001).
  - b. Identify the types of VOC present and whether the mixture designates as DW at 10,000 ppm (contact Ecology for assistance in designation).
  - c. If mixture is DW because it exceeds 10,000 ppm,
    - Manage the whole tank contents as DW (work with hazardous waste contractor or Ecology) or alternatively;
    - If a phase separated liquid, manage the floating (solvent) phase separately as a dangerous waste (D001 would be most likely waste code).
    - Re-test residuals and designate.
- R6. If a composite sample exceeds 1000 ppm VOC it may be appropriate to direct that the tank be aerated to further reduce the levels of VOC. Such treatment will be subject to approval by local air pollution control agencies. 1000 ppm represents 1/10th of the concentration of common drug lab solvents necessary to designate as Washington State dangerous waste.
- R7. If a composite sample is below 1000 ppm VOC it may be managed for disposal at a septage treatment facility, sewage treatment plant or hazardous waste management contractor/facility, subject to acceptance by the facility operator.
- R8. Local Health Districts in Ecology's Southwest Region may send lab analysis data to Leslie Morris, Ecology HWTR/SWRO. Leslie will compile drug lab/septic tank data and communication any significant findings back to state and local officials. All other local health districts should contact Ecology's HWTR representative in their region.

Ecology's HWTR Program will provide technical and regulatory assistance to local health districts regarding waste designation and management.

## Attachment 2. ACUTE TOXICITY OF COMMON DRUG LAB WASTES

J. Sachet 5/31/01

**A. TOXIC CATEGORY:** Data is from two sources, the NIOSH Registry of Toxic Effects of Chemical Substances (RTECS), and the EPA Aquatic Information Retrieval database (AQUIRE). Washington Dangerous Waste Regulations, WAC 173-303-100, say NIOSH RTECS data is the authority. Use most conservative # within RTECS. If RTECS conflicts with other sources, use RTECS. Testing is always an option.

**Notes:** Assume LD50 tests were performed on 100% pure chemicals or active ingredients. Washington State Dangerous Waste Toxic Criteria are X, A, B, C, or D. Recommendations for designation, unless otherwise noted, use the most conservative (highest) toxicity category reported. None of the clandestine drug lab source chemicals identified in septic tanks were classified as Toxic category X through A chemicals.

Chemical listed below are identified by the toxicity category of "B", "C" or "D", or "None", where no category could be established.

"No data" means no results were reported in AQUIRE or RTECS for the chemical or compound.

"No comp data" means results were reported but not in a manner that is comparable with dangerous waste criteria, therefore, conclusions about waste designation could not be reached on the basis of this information source.

<u>Chemical/Waste</u> (CAS #)	<u>Applicable LD50/Tests</u>	<u>DW Toxicity</u> <u>Category</u>	<u>Dangerous</u> <u>Waste Code at</u> <u>100%</u> <u>Concentration</u>	<u>Comments</u>
Ammonia, Aqueous (1336-21-6)	AQUIRE (salmon, 4 day) 7 ppm RTECS (oral rat) 350 mg / kg	C C	WT02	
Benzene, 1,2-dichloro (95-50-1)	AQUIRE (salmon, 4 day) 1.52 mg / L RTECS (oral rat) 500 mg / kg (inhalation rat 821 ppm / 7H) (dermal rabbit >10 gm / kg)	C C	WT02	Compound detected by Thurston Co. in a drug lab septic tank
Ethyl benzene (100-41-4)	AQUIRE (salmon, 4 day) 4.20 mg / L RTECS (oral rat) 3500 mg / kg (inhalation rat 4000 ppm / 4H) (dermal rabbit 17800 µL / kg)	C C	WT02	Compound detected by Thurston Co. in a drug lab septic tank.
Iodine (7553-56-2)	AQUIRE (trout, 4 day) <10 mg / L RTECS (oral rat) 14000 mg / kg or 14 gm /kg (inhalation rat 137 ppm / 1H)	C None	WT02	
Naphtha - petroleum distillates (8030-30-6)	AQUIRE (trout, 4 day) 8.8 mg / kg RTECS (oral rat) >5000 mg / kg or >5 gm / kg (inhalation rat 1600 ppm / 6H) (dermal rabbit >3 gm / kg)	C None	WT02	
Phosphorus, red (7723-14-0)	AQUIRE (trout, 4 day) <1 mg / kg RTECS (oral rat) 3030 µg / kg or 3.03 mg / kg	B A	WT01?	Oral rat LD50 is on white phosphorus <b>WT02 Category C Recommended.</b>

<u>Chemical/Waste (CAS #)</u>	<u>Applicable LD50/Tests</u>	<u>DW Toxicity Category</u>	<u>Dangerous Waste Code at 100% Concentration</u>	<u>Comments</u>
Toluene (108-88-3)	AQUIRE (salmon, 4 day) 5.5 mg / kg RTECS (oral rat) 636 mg/kg (inhalation rat 49 gm / m3 / 4H) (dermal rabbit >14100 µL / kg)	C D	WT02	
Xylene (1330-20-7)	AQUIRE (trout, 4 day) 8.2 mg / kg RTECS (oral rat) 4300 ppm (inhalation rat 5000 ppm / 4H) (dermal rabbit >1700 mg / kg)	C D	WT02	
Ether (60-29-7)	AQUIRE (no data) RTECS (oral rat) 1215 mg/kg (inhalation rat) 32000 ppm / 4H (dermal rabbit) >20 mL / kg	None D	WT02	
Ephedrine (299-42-3)	AQUIRE (no data) RTECS (oral rat) 600 mg/kg	None D	WT02	
Hydrochloric acid (7647-01-0)	AQUIRE (no comp data) RTECS (inhalation rat) 3124 ppm/1H (Oral rabbit) 900 mg/kg	None None D	WT02	
Isopropyl alcohol (67-63-0)	AQUIRE (trout, 4 day) 13 mg/kg RTECS (oral rat) 5045 mg/kg (dermal rabbit) 12800 mg/kg	D None D	WT02	
Lithium (7439-93-2) Lithium battery	AQUIRE (no data) RTECS (no comp data) SAFT America MSDS (oral rat) 2730 mg/kg	None None D	WT02	
Methyl alcohol (67-56-1)	AQUIRE (trout, 4 day) 19,000 mg/L RTECS (dermal rabbit) 15,800 mg/kg	None D	WT02	
Methyl ethyl ketone (78-93-3)	AQUIRE (no data) RTECS (oral rat) 2737 mg/kg (dermal rabbit) 6480 mg / kg	None D	WT02	
Sodium hydroxide (1310-73-2)	AQUIRE (no comp data) RTECS (no comp data)	None	None	RTECS (oral rabbit) 500 mg/kg suggest D <b>WT02 recommended</b>
Sulfuric acid (7664-93-9)	AQUIRE (no comp data) RTECS (oral rat) 2140 mg/kg	None D	WT02	
Ammonia, anhydrous (7664-41-7)	AQUIRE (no data) RTECS (inhalation rat) 2000 ppm/4H	None None	None	Inhalation hazard per USDOT <b>WT02 recommended</b>
Hydriotic acid (No CAS#)	AQUIRE (no data) RTECS (no data)	None None	None	<b>WT02 recommended</b>

<b><u>Chemical/Waste (CAS #)</u></b>	<b><u>Applicable LD50/Tests</u></b>	<b><u>DW Toxicity Category</u></b>	<b><u>Dangerous Waste Code at 100% Concentration</u></b>	<b><u>Comments</u></b>
Acetone (67-64-1)	AQUIRE (trout, 4 day) >4000 mg/L RTECS (oral rat) 5800mg/kg (dermal rabbit) 20 mL / kg	None None	None	
Ethyl alcohol (64-17-5)	AQUIRE (trout, 4 day) 137 mmol/kg RTECS (oral rat) 7060 mg/kg (dermal rabbit) 20 gm / kg	None None	None	

**B. EXAMPLES:**

Use the Equivalent Concentration Formula from WAC 173-303-100(5):  $EC (\%) = \frac{\sum X\%}{1} + \frac{\sum A\%}{10} + \frac{\sum B\%}{100} + \frac{\sum C\%}{1000} + \frac{\sum D\%}{10000}$

**Example 1:** Mixture of solvents discharged to septic tank. Tank sample results are

Dichlorobenzene	(toxic category C)	600 µg / L	=	0.6 mg / L	=	.00006 %
Toluene	(toxic category C)	1800 µg / L	=	1.8 mg / L	=	.00018 %
Ethyl benzene	(toxic category C)	330 µg / L	=	0.33 mg / L	=	.000033 %
Xylene	(toxic category C)	1800 µg / L	=	1.8 mg / L	=	.00018 %
<b>Sum</b>						<b>.000453 %</b>

$EC (\%) = \frac{.000453}{1000} = .000000453 \%$ , which is less than .001%; therefore it is not a dangerous waste.

**Example 2:** Mixture of 50% mixture of iodine in water (note: this is hypothetical since iodine crystals are not readily soluble in water)

Iodine	(toxic category C)	500,000 ppm	=	50%
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$EC (\%) = \frac{50\%}{1000} = .05\%$ , which is greater than .001% and less than 1.0%; therefore the mixture is DW, WT02.

**Reverse Calculation of DW Designation Levels:** How much of a particular toxic category substance (one or a mixture of several) would it take for septic tank contents to book designate as state-only toxic dangerous waste? Use the equivalent concentration formula for each toxic category. Calculate the unknown percentage of a substance that it would take to equal or exceed the designation threshold of .001%.

Solution for Category B toxins	Solution for Category C toxins	Solution for Category D toxins
<p>The designation threshold is .001%</p> $\frac{X}{100} = .001\%$ <p><math>X = (.001\% \times 100).</math></p> <p><math>X = 0.1\%</math></p>	<p>The designation threshold is .001%</p> $\frac{X}{1000} = .001\%$ <p><math>X = (.001\% \times 1000).</math></p> <p><math>X = 1\%</math></p>	<p>The designation threshold is .001</p> $\frac{X}{10,000} = .001\%$ <p><math>X = (.001\% \text{ times } 10,000)</math></p> <p><math>X = 10\%</math></p>
<p><b>You would have to have at least 0.1% of a toxic category B substance to designate as WT02 dangerous waste. This means at least 1,000 ppm or 1 gallon in a 1000-gallon septic tank.</b></p>	<p><b>You would have to have at least 1% of a toxic category C substance to designate as WT02 dangerous waste. This means at least 10,000 ppm or 10 gallons in a 1000-gallon septic tank.</b></p>	<p><b>You would have to have at least 10% of a toxic category D substance before it would designate as WT02 dangerous waste. This means at least 100,000 ppm or 100 gallons in a 1000-gallon septic tank.</b></p>